Chemical Reactions

Chapter 10 Test Answer Key

**Matching** (1 pt each)

h. Net ionic equation

i. Precipitate

j. Product

k. Reactant

l. Single-replacement reaction

m. Solute

n. Solvent

a. Aqueous solution

b. Chemical equation

c. Chemical reaction

d. Combustion reaction

e. Complete ionic equation

f. Decomposition reaction

g. Double-replacement reaction

\_\_\_A\_\_\_ 1. A solution in which the solvent is water

\_\_\_E\_\_\_ 2. An equation that shows all of the particles in solution as they actually exist

\_\_\_\_M\_\_ 3. Substance dissolved in a solution

\_\_\_\_H\_\_ 4. An equation that includes only the particles that participate in the reaction

\_\_\_D\_\_\_ 5. A reaction in which oxygen combines with a substance and releases heat and

light energy

\_\_\_L\_\_\_ 6. A reaction in which the atoms of one element replace the atoms of another

element in a compound

\_\_\_G\_\_\_ 7. A reaction involving the exchange of positive ions between two compounds

dissolved in water

\_\_\_C\_\_\_ 8. The process by which the atoms of one or more substances are rearranged to

form different substances

\_\_\_J\_\_\_ 9. A substance formed during a chemical reaction

\_\_\_N\_\_\_ 10. The most plentiful substance in a solution

**Problem**

11. Fill in the blank with the type of reaction (synthesis (S), decomposition (D), single-replacement (SR), double-replacement (DR), combustion (C)) that corresponds with the reactants and products: (1 pt each)

|  |  |  |
| --- | --- | --- |
| **Reaction Types** | **Reactants** | **Products** |
| C | One plus oxygen | One or more oxides |
| D | One | Two or more |
| DR | Two compounds | Two compounds |
| S | Two or more | One |
| SR | An element and a compound | An element and a compound |

12. Balance the following reactions: (3 pts each)

a. \_\_\_\_2\_\_\_ Al (s) + \_\_\_\_3\_\_\_ Cl2 (g) → \_\_\_\_2\_\_\_ AlCl3 (s)

b. \_\_\_\_\_\_\_ S8 (s) + \_\_\_16\_\_\_\_ Cu (s) → \_\_\_\_8\_\_\_ Cu2S (s)

c. \_\_\_\_\_\_\_ Cu(NO3)2 (aq)+ \_\_\_2\_\_\_\_ NaOH (s) → \_\_\_\_\_\_\_ Cu(OH)2 (s)+ \_\_\_2\_\_\_\_ NaNO3 (aq)

d. \_\_\_2\_\_\_\_ SO2 (g) + \_\_\_\_\_\_\_ O2­ (g) → \_\_\_\_2\_\_\_ SO3 (g)

e. \_\_\_2\_\_\_\_ NaF (s) → \_\_\_2\_\_\_\_ Na (s) + \_\_\_\_\_\_\_ F2 (g)

13. Identify the reaction type (synthesis (S), decomposition (D), single-replacement (SR), double-replacement (DR), combustion (C)) and predict the products of the following reactions: (5 pts each)

1. Cl2 + KI →KCl + I2  
   Reaction type: single replacement
2. 2K + Cl2 → 2 KCl  
   Reaction type: ­­­­­­­­­­­synthesis
3. BaCl2 + Na2SO4 → 2 NaCl + BaSO4

Reaction type: ­­­­­­­­­­­double replacement

1. 2 C2H6 + 7 O2 → 4 CO2 + 6 H2O  
   Reaction type: ­­­­­­­­­­­combustion
2. 2 Al2O3 → 4 Al + 3 O2  
   Reaction type: ­­­­­­­­­­­decomposition

**Short Answer** (5 pts each)

14. List 3 pieces of evidence of a chemical reaction and give an example of each.

1. Color change: When a marshmallow is burned, it becomes black.
2. Formation of a precipitate: When copper sulfate reacts with sodium carbonate, a blue solid is formed.
3. Gas is released: In the elephant toothpaste demonstration, O2 gas is formed and causes the detergent to foam

15. Explain what happens when sugar is heated. Be sure to explain what type of reaction occurs and what products form. Use your findings from the *Where’s the Evidence?*lab to explain your answer.

When sugar is heated, the carbon atoms react with oxygen atoms in the air to form carbon dioxide and water vapor. This is known as a combustion reaction. In the *Where’s the Evidence?* lab, you could see water appear in the tin foil tray as the sugar heated and reacted with the oxygen in the air.

16. O2 + N2 = N2O4

For the reaction above, state which are the products and which are the reactants. How is this equation written incorrectly? Write the equation in the correct form.

**Reactants:**

O2, N2

**Products:**

N2O4

**How is this equation written incorrectly?**

Chemical reactions use “→” not “=” signs. Also, it is not balanced.

**Correct equation:**

2 O2 + N2 → N2O4